VEGETATION DESCRIPTION FOR ROCK CREEK PARK

Fagus grandifolia - Quercus alba / Podophyllum peltatum Forest (CEGL006075)

COMMON NAME	Beech - White Oak / Mayapple Forest
SYNONYM	Coastal plain mixed oak - beech forest
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	I. Forest
PHYSIOGNOMIC SUBCLASS	IB. Deciduous forest
PHYSIOGNOMIC GROUP	IB2. Cold-deciduous forest
FORMATION	IB2Na. Lowland or submontane broad-leaved cold-deciduous forest
ALLIANCE	*Fagus grandifolia* - *Quercus alba* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

RANGE
This association occurs in New York, New Jersey, Delaware, Maryland, and Pennsylvania and may also occur in Massachusetts and Virginia.

ENVIRONMENTAL DESCRIPTION
This forest association occurs on mesic to dry-mesic slopes or gentle gradients. Soils are typically well-drained, acidic sandy loams. The soils may be derived from parent material of relatively greater fertility. This association is found primarily on or in close proximity to the coastal plain. In Rock Creek Park this association occurs primarily in areas mapped as Manor and Glenelg loam, deep well-drained to excessively drained soils underlain by acid crystalline rocks (Smith 1976). Some locations of this vegetation type also occurred on Neshaminy soils in the Glover Archbold section of the park. These soils are underlain by semibasic or mixed basic and acidic rocks; this may play a role in the proliferation of non native species at this site.

USFWS WETLAND SYSTEM Not applicable.

MOST ABUNDANT SPECIES

Globally

Strata	Species
Canopy	*Fagus grandifolia, Quercus alba, Carya spp., Liriodendron tulipifera*

Sub-canopy	*Ilex opaca, Cornus florida*
Shrub layer	*Viburnum acerifolium*
Herbaceous	*Podophyllum peltatum, Polystichum acrostichoides, Uvularia* spp.*, Parthenocissus quinquefolia Polygonatum biflorum.*

Rock Creek Park

Strata	Species
Canopy	*Fagus grandifolia, Quercus alba, Liriodendron tulipifera*
Sub-canopy	*Ilex opaca, Cornus florida*
Shrub layer	*Viburnum acerifolium*
Herbaceous	*Uvularia* spp.*, Parthenocissus quinquefolia, Polygonatum biflorum, Polystichum acrostichoides*

DIAGNOSTIC SPECIES
Fagus grandifolia, Quercus alba, Ilex opaca, Viburnum acerifolium

VEGETATION DESCRIPTION
Rangewide, this dry-mesic to mesic forest is co-dominated by oaks (*Quercus* spp.), beech (*Fagus grandifolia*), hickory (*Carya* spp.), tulip poplar (*Liriodendron tulipifera*) and sweetgum (*Liquidambar styraciflua*). A sparse sub-canopy of flowering dogwood (*Cornus florida*) and American holly (*Ilex opaca*) is usually present. The shrub layer is characterized by maple-leaved viburnum (*Viburnum acerifolium*). Typical herbs include mayapple (*Podophyllum peltatum*), bellwort (*Uvularia* spp.), Virginia creeper (*Parthenocissus quinquefolia*), pink lady's slipper (*Cypripedium acaule*), Solomon's seal (*Polygonatum biflorum*), partridgeberry (*Mitchella reprens*), jack-in-the-pulpit (*Arisaema triphyllum*) and Indian pipes (*Monotropa uniflora*). The herb layer may be lush to depauperate.

In Rock Creek Park this forest is dominated by white oak (*Quercus alba*), beech (*Fagus grandiflora*) and tulip poplar (*Liriodendron tulipifera*) in the canopy and sub-canopy. Associates include other oak species (*Quercus rubra*, *Q. velutina, Q. prinus, Q. falcata*), hickories (*Carya* spp.) and black gum (*Nyssa sylvatica*). Sweetgum (*Liquidambar styraciflua*) is rarely present in this community as it occurs in the park. Flowering dogwood (*Cornus florida*) is common and American holly (*Ilex opaca*) is characteristic but sparse. Maple-leaved viburnum (*Viburnum acerifolium*) is nearly always present, often forming a well-defined shrub layer. Herb composition may be fairly diverse and ranges from sparse to dense depending on soil type, disturbance history and moisture levels. Mayapple (*Podophyllum peltatum*), jack-in-the-pulpit (*Arisaema atrorubens*), and poison ivy (*Toxicodendron radicans*) are typical associates. Christmas fern (*Polystichum ascrostichoides*) may be locally abundant, typically on hillsides. Other associates include cucumber root (*Medeola virginiana*), squawroot (*Conopholis americana*), sweet cicely (*Osmorhiza claytonii*), false solomons seal (*Smilacina racemosa*), wild yam (*Dioscorea villosa*), tick-trefoil (*Desmodium* sp.), partridgeberry (*Mitchella repens*) and others. Non-native species such as garlic mustard (*Alliaria officianalis*), Japanese honeysuckle (*Lonicera japonica*), and bittersweet (*Celastrus orbiculatus*) are common to abundant in some locations.

Two variants of the classic Beech - white oak / mayapple forest association could be discerned from the data. These relate to the soil moisture regime; the mixed oak/beech variant occurring on drier sites and the beech-Tulip poplar variant occurring on more mesic sites.

MIXED OAK / BEECH VARIANT:
This is a dry-mesic forest of slopes and hilltops. In comparison to the typical examples of the beech - white oak/mayapple forest association, this mixed oak - beech variant is characterized by greater percent cover of oaks and less dominance by tulip poplar. The canopy is co-dominated by a mix of red oak (*Quercus rubra*), black oak (*Q. velutina*), and white oak (*Q. alba*) and chestnut oak (*Q. prinus*). Beech usually occurs in the sub-canopy as a co-dominant with oaks, red maple (*Acer rubrum*), black gum (*Nyssa* sylvatica) and hickory (*Carya* spp.). Maple-leaved viburnum (*Viburnum acerifolium*) is common but spicebush (*Lindera benzoin*), hornbeam (*Carpinus caroliniana*) and jack-in-the-pulpit (*Arisaema atrorubens*) are conspicuously lacking or sparse, a feature which distinguishes this variant from the typical beech - white oak/mayapple association. This variant occurs on well drained mid- to upper level slopes. Included in this association are the chestnut oak – oak type defined by Anderson et al. (1977, Rock Creek Park) and the mixed oak forest (Robichaud and Buell 1973, New Jersey). The oak - hickory forest of Maryland's western shore described by Shreve et al. (1910), in part, is included in this association; tulip poplar and beech were noted as frequent components. This type also appears to be similar to the Appalachian oak-hickory forest of New York (Reschke 1990). This variant is closely related to the *Quercus alba* (*Q. rubra, Carya* spp.) Forest Alliance (Grossman et al. 1998) but additional data and rangewide assessment would be necessary to determine if the two are synonymous.

BEECH - TULIP POPLAR VARIANT:
This variant of the beech - white oak / mayapple association is characterized by a dominance of tulip poplar (*Liriodendron tulipifera*) and beech (*Fagus grandiflora*) in the canopy and sub-canopy. Associates include red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*) and hornbeam (*Carpinus caroliniana*) in the canopy or sub-canopy. Hornbeam is quite characteristic of this community; it is more prevalent in this variant than in the typical beech - white oak / mayapple association. Oaks (Quercus spp.), sycamore (*Platanus occidentalis*) and boxelder (*Acer negundo*) may be present as well but usually in low abundance. Spicebush (*Lindera benzoin*) and viburnums (*Viburnum prunifolium, V. acerifolium, V. dilitatum* and others) are common in the shrub layer. The herb layer may be diverse, with many of the components of the typical beech - white oak / mayapple association. Jack-in-the-pulpit (*Arisaema atrorubens*) is usually more prevalent in this variant. The beech - tulip poplar forest occurs on mesic mid- to lower slopes, often in proximity to streams but not on the floodplain itself. This may be related to or transitional to the *Fagus grandifolia* Temporarily Flooded Alliance (Grossman et al. 1998). Rangewide assessment of that alliance is incomplete.

NOTEWORTHY SPECIES

CONSERVATION RANK G?

RANK JUSTIFICATION
The *Fagus grandiflora* - *Quercus alba* Forest is described as widespread and relatively common Alliance (Sneddon et al. 1996). The association has not been assigned a conservation rank but is not likely to be uncommon or rare. Further analysis is needed to determine the rank of this forest type.

COMMENTS
The mixed hardwood upland forest described by Jorling (1969, Rock Creek Park) is synonymous with this association. Five forest types described by Anderson et al. (1977, Rock Creek Park) including the oak-beech, tulip tree-beech, tulip tree-oak, tulip tree-locust pine, and chestnut oak-hickory-beech associations fall within the *Fagus grandifolia – Quercus alba / Podophyllum peltatum* Forest Association. Portions of the dry-mesic inland mixed oak forest of New Jersey (Breden 1989) including sites described by Robichaud and Buell (1973) and Lord and Boerner (1981) are contained in this association. Also included are the mesophytic oak-hickory forest of the western shore of Maryland (Shreve 1910); the *Liriodendron tulipifera* - *Quercus* spp. - *Fagus grandifolia* forest (Clancy 1996, Delaware), in part; Pennsylvania's mesic-central forest (Smith 1983), in part; and Long Island's oak, mixed dicot-dogwood forest and the mixed mesophytic forest (Greller 1977) which is encompassed by Reschke's oak-tulip tree forest (1990, New York).

The term "mixed mesophytic" has been frequently used (e.g., Bromley 1935, Greller 1977, Rawinski 1989) to describe this and other associations in this alliance due to similarities in species composition with the Mixed Mesophytic Forest (see Braun 1950) of the central Appalachian mountains and vicinity. However, the classic Mixed Mesophytic Forest (or *Liriodendron tulipifera* - *Tilia american* var. *heterophylla* - *Aesculus flava* - *Acer saccharum* Forest Alliance in Grossman et al. 1998) is distinguished by an exceptionally high diversity of canopy and understory species and the presence of basswood (*Tilia americana* var. *heterophylla*) and buckeye (*Aesculus flava*) (Braun 1950). Although there are similarities in canopy and subcanopy associates (e.g., beech, white oak, red oak, tulip poplar, dogwood, maple-leaved viburnum and spicebush), the alliance represented at Rock Creek Park and other locations in the northeast (particularly on the coastal plain) lacks both the characteristic indicator tree species (*Tilia* spp. and *Aesculus flava*) and is considerably less diverse in species composition than the classic Mixed Mesophytic Forest.

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PLOTS
(Groups refer to notation in TWINSPAN analysis)

GROUP 1 - MIXED OAK - BEECH VARIANT (less mesic, more oak) 9, 10, 11 (borderline with group 2), 13, 20, 22, 31, 33, 34, 56, 86

GROUP 2 - Beech-white oak/mayapple forest association (classic type) 15, 16, 17, 18, 19 (around forest opening), 27, 29, 32, 35, 57, 81, 83

GROUP 3 - BEECH - TULIP POPLAR (more mesic variant) 4, 5, 21, 23*, 24, 25* (* related to floodplain forest), 28, 30, 37, 51 (weedy), 52, 53, 61

Liriodendron tulipifera Forest [Provisional]

COMMON NAME Tulip poplar forest

SYNONYM

TNC SYSTEM Terrestrial

PHYSIOGNOMIC CLASS I. Forest

PHYSIOGNOMIC SUBCLASS IB. Deciduous forest

PHYSIOGNOMIC GROUP IB2. Cold-deciduous forest

FORMATION IB2Na. Lowland or submontane cold-deciduous forest

ALLIANCE *Liriodendron tulipifera* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE
Widespread. Most common in the central and southern Appalachians but also occurs on the Coastal Plain and in the Piedmont. Occurs in Alabama, Georgia, Tennessee, Kentucky, North Carolina, South Carolina, Virginia, and probably other locations as well.

ENVIRONMENTAL DESCRIPTION
Rangewide this association occurs along streams and on upland mountain benches. At Rock Creek Park, the association occurs on mesic, mid-slope to low-slope sites that were cleared and/or cultivated. Sample plots representing this association occur primarily on areas mapped as Manor loam (Smith 1976), soils that are deep, well-drained and underlain by acidic rock. There may be other locations for this association that were not sampled which occur on different soil types.

USFWS WETLAND SYSTEM Not applicable.

MOST ABUNDANT SPECIES

Globally

Strata	Species
Canopy	*Liriodendron tulipifera, Acer rubrum, Robinia pseuodoacacia*
Sub-canopy	*Acer negundo*
Shrub layer	
Herbaceous	

Rock Creek Park

Strata	Species
Canopy	*Liriodendron tulipifera*
Sub-canopy	*Acer negundo*
Shrub layer	*Lindera benzoin, Rubus allegheniensis, Rosa multiflora, Ampelopsis brevipedunculata*
Herbaceous	*Ranunculus ficaria*

DIAGNOSTIC SPECIES
Liriodendron tulipifera

VEGETATION DESCRIPTION
This is a provisional association characterized by a dominance of tulip poplar (*Liriodendron tulipifera*). Rangewide, associates include red maple (*Acer rubrum*), locust (*Robinia pseudoacacia*), boxelder (*Acer negundo*), sugar maple (*Acer saccharum*) and black birch (*Betula lenta*). Sweetgum (*Liquidambar styraciflua*) is common in Coastal Plain and Piedmont locations. Red oak (*Quercus rubra*), hickories (*Carya* spp.) and pine (*Pinus strobus, P. virginiana*) are typical associates in the Central Appalachians. Vines can be abundant including grape (*Vitis* spp.), greenbriar (*Smilax* spp.), and Virginia creeper (*Parthenocissus quinquefolia*).

In Rock Creek Park, this association is dominated by tulip poplar (*Liriodendron tulipifera*) with no co-dominants in the canopy. It is essentially a tulip poplar monoculture, with tulip poplar and/or box elder (*Acer negundo*) in the sub-canopy. Spicebush (*Lindera benzoin*) and blackberry (*Rubus allegheniensis*) are present in the shrub layer. These sites tend to be weedy and non-native species such as multiflora rose (*Rosa multiflora*) and porcelain berry (*Ampelopsis brevipedunculata*) and lesser celandine (*Ranunculus ficaria*) may be prevalent. Only sites that wereexclusively dominated by tulip poplar were assigned to this association. Sites that were dominated by tulip poplar but that contained at least 25% other hardwoods in the canopy or sub-canopy were considered to be early successional examples of the *Fagus grandifolia - Quercus alba / Podophyllum peltatum* Forest Association or the *Platanus occidentalis - Fraxinus pensylvanica* Forest Association.

NOTEWORTHY SPECIES

CONSERVATION RANK GW (not of conservation interest)

RANK JUSTIFICATION
Successional forest following cropping or clearcut logging or other severe disturbance (including fire).

COMMENTS
Portions of the tulip tree association described by Anderson et al.(1977) are included in this association.

REFERENCES

Anderson. R. R., D. M. McFaden, R. J. Kramer, J.C. Dee, and G. C. Jones. 1977. Rock Creek Park and Rock Creek and Potomac Parkway: vegetation community structure and automated classification of vegetation communities. Unpublished report. Department of Biology, The American University, Washington, D.C. National Park Service Contract number CX6000-3-1452.

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PLOTS

3, 38, 62

Quercus (prinus, velutina) / Gaylussacia baccata Forest (CEGL006282)

COMMON NAME	Chestnut oak - black oak / huckleberry forest
SYNONYM	Chestnut oak forest
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	I. Forest
PHYSIOGNOMIC SUBCLASS	IB. Deciduous forest
PHYSIOGNOMIC GROUP	IB2. Cold-deciduous forest
FORMATION	IB2Na. Lowland or submontane cold-deciduous forest
ALLIANCE	*Quercus prinus - (Quercus coccinea, Q. velutina)* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE
This association occurs across all or most of New England south to New York, New Jersey, Delaware, Pennsylvania, and the District of Columbia and is likely to be present in Virginia and Maryland as well. Further analysis is necessary to determine if occurrences containing a notable component of *Nyssa sylvatica* (Delaware, Pennsylvania, and District of Columbia, and probably Maryland) are distinct enough to be defined as a separate association within this alliance.

ENVIRONMENTAL DESCRIPTION
This forest association occurs on ridgetops, convex upper slopes, and south-facing slopes. Soils are rocky, well-drained acidic, sandy-loams with a poorly developed organic layer. Bedrock may be close to or at the surface. Surface runoff and erosion is common; Anderson et al. (1977) noted this as a management concern at the park.

USFWS WETLAND SYSTEM Not applicable.

MOST ABUNDANT SPECIES

Globally

Strata	Species
Canopy	*Quercus prinus, Q. velutina, Q. coccinea*
Sub-canopy	*Acer rubrum, Carya* spp.*, Sassafras albidum*
Shrub layer	*Gaylussacia baccata, Vaccinium pallidum, Kalmia latifolia*

Rock Creek Park

Strata	Species
Canopy	*Quercus prinus, Nyssa sylvatica*
Sub-canopy	*Amelanchier arborea, Sassafras albidum*
Shrub layer	*Vaccinium pallidum, Gaylussacia baccata,*
Herbaceous	(sparse)

DIAGNOSTIC SPECIES
Quercus prinus, Vaccinium pallidum, Gaylussacia baccata

VEGETATION DESCRIPTION
Rangewide, this is a dry oak / heath forest dominated by chestnut oak (*Quercus prinus*) or co-dominated by chestnut oak, black oak (*Q. velutina*) and scarlet oak (*Q. coccinea*). Other associates include red maple (*Acer rubrum*), serviceberry (*Amelanchier arborea*), pignut (*Carya glabra*), black gum (*Nyssa sylvatica*), sassafras (*Sassafras albidum*), black locust (*Robinia pseudoacacia*), pine (*Pinus* spp.) and other oaks (*Quercus* spp.). Ericaceous shrubs such as mountain laurel (*Kalmia latifolia*), black huckleberry (*Gaylussacia baccata*) and blueberry (*Vaccinium pallidum*, *V. stamineum*) are characteristic. The sparse herb layer may include wintergreen (*Gaultheria procumbens*), Indian pipes (*Monotropa uniflora*), poverty grass (*Danthonia spicata*) and other species.

In Rock Creek Park this forest association is characterized by a dominance of chestnut oak (*Quercus prinus*) and black gum (*Nyssa sylvatica*) and an absence or sparse cover of white oak (*Quercus alba*). Red oak (*Quercus rubra)* and/or black oak (*Quercus velutina*) and red maple (*Acer rubrum*) are often present but sparse. Sassafras (*Sassafras albidum*) and serviceberry (*Amelanchier arborea*) are typical in the sub-canopy or tall shrub layer and vines such as greenbrier (*Smilax glauca* and *S. rotundifolia*) and grape (*Vitis* spp.) are common. Characteristic shrubs include heaths such as blueberry (*Vaccinium pallidum*), huckleberry (*Gaylussacia baccata*), mountain laurel (*Kalmia latifolia*) and azalea (*Rhododendron periclymenoides*). The herbaceous layer tends to be sparse or absent.

NOTEWORTHY SPECIES

CONSERVATION RANK G3G5

RANK JUSTIFICATION
Further data are needed to define the range and extent of this association range and the corresponding rank.

COMMENTS
The chestnut oak forests (Anderson et al. 1977) previously described from Rock Creek Park are included in the *Quercus (prinus, velutina) / Gaylussacia baccata* Forest association. The oak-hilltop forest (Breden 1989, New Jersey); the xeric central hardwood (broadleaf) forest (Smith 1983, Pennsylvania), in part; the chestnut-oak forest (Reschke 1990, New York), in part; and the oak-mountain laurel forest (Greller 1977, New York) are contained within this association.

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PLOTS

2, 8, 14, 48, 49

Platanus occidentalis - Fraxinus pennsylvanica Forest (CEGL006036)

COMMON NAME	Sycamore - Green ash Forest
SYNONYM	Floodplain Forest
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	I. Forest
PHYSIOGNOMIC SUBCLASS	IB. Decidous forest
PHYSIOGNOMIC GROUP	IB2. Cold-deciduous forest
FORMATION	IB2Nd. Temporarily flooded cold-deciduous forest
ALLIANCE	*Platanus occidentalis* - (*Fraxinus pennsylvanica, Celtis laevigata, Acer saccharinum)* Temporarily Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

RANGE
This association ranges from Rhode Island to Connecticut, New York, Delaware, Pennsylvania, and Maryland.

ENVIRONMENTAL DESCRIPTION
This association occurs along stream banks, low terraces and other low-lying areas subject to temporary or irregular flooding. Soils range from gravel and coarse sand along the edges of the major streams to deep silt loams on the broader floodplains and upper banks of the stream. At Rock Creek Park, this association occurs primarily on areas mapped as Codorus silt loam, a moderately well-drained to somewhat poorly-drained soil of Piedmont floodplains (Smith 1976). Smaller deposits of sand and gravel are contained within this type. The floodplain areas in the park tend to be small in area; Smith (1976) noted that most map units of the Codorus silt loams in the Washington D.C. area averaged about 30 – 40 acres. The soils tend to be strongly acidic and are characterized by a dark silt loam layer (about 8 inches) underlain by a deeper, yellow-brown soil layer. Woody debris typically covers 15 percent of the ground surface, leaf litter layer may be thin to absent.

USFWS WETLAND SYSTEM Palustrine System

MOST ABUNDANT SPECIES

Globally

Strata	Species
Canopy	*Platanus occidentalis, Fraxinus pennsylvanica*

Sub-canopy	*Acer negundo*
Shrub layer	*Lindera benzoin*
Herbaceous	

Rock Creek Park

Strata	Species
Canopy	*Platanus occidentalis*,
Sub-canopy	*Acer negundo*
Shrub layer	*Lindera benzoin*
Herbaceous	*Alliaria officianalis, Impatiens capensis*

DIAGNOSTIC SPECIES (at Rock Creek Park)
Platanus occidentalis, *Acer negundo, Impatiens capensis, Polygonum hydropiperoides*

VEGETATION DESCRIPTION
This association is classified as a forest type but canopy cover ranges from 50 to 90 percent cover. It appears exclusively on floodplains and adjacent areas. The canopy is typically dominated by sycamore (*Platanus occidentalis*) and green ash (*Fraxinus pennsylvanica*) although box elder (*Acer negundo*), American elm (*Ulmus americana*), black walnut (*Juglans nigra*), sweet gum (*Liquidambar styraciflua*) and other species may be common associates or co-dominants with the sycamore.

At Rock Creek Park this association is characterized by sycamore (*Platanus occidentalis*) in the canopy and box elder (*Acer negundo*) in the canopy and/or sub-canopy. Red maple (*Acer rubrum*) and tulip poplar (*Liriodendron tulipifera*) are often co-dominant with the sycamore. Green ash (*Fraxinus pennsylvanica*), white ash *(F. americana*), and hickory (*Carya tomentosa, Carya glabra*) are frequent associates. Bladdernut (*Staphylea trifolia*) and river birch (*Betula nigra*) are occasional associates within the park. The shrub layer may be dominated by spicebush (*Lindera benzoin*) with black haw (*Viburnum prunifolium*) occurring less frequently. Characteristic herbaceous species include jewelweed (*Impatiens capensis*), mild water-pepper (*Polygonum hydropiperoides*), jack-in-the-pulpit (*Arisaema atrorubens*), enchanter's nightshade (*Circea quadrisulcata*), skunk cabbage (*Symplocarpus foetidus*), poison ivy (*Toxicodendron radicans*) and others. Jorling (1969) also describes wood nettle (*Laportea canadensis*) as a prominent herb in the floodplains. Weedy non-native species such as garlic mustard (*Alliaria officianalis*), lesser celandine (*Ranunculus* ficaria), English ivy (*Hedera helix*), stilt grass (*Microstegium vimineum*), multiflora rose (*Rosa multiflora*), and Japanese honeysuckle (*Lonicera japonica*) may be frequent.

NOTEWORTHY SPECIES

CONSERVATION RANK G?

RANK JUSTIFICATION
Rank has not been determined but total acreage (rangewide) is limited. Good quality examples are uncommon. Threats include development and filling, alteration in flooding

regimes, excessive beaver activity and encroachment by aggressive non-native plant species. Further data are needed to define the rank.

COMMENTS

The floodplain forest habitat described by Jorling (1969, Rock Creek Park) is synonymous with this association. The "high phase" and "low phase" floodplain types described by Anderson et al. (1977, Rock Creek Park) and the *Platanus occidentalis-Acer negundo/Lindera benzoin* floodplain forest (Clancy 1996, Delaware) are included in this association. Portions of the river swamps of Maryland's western shore area (Shreve et al.1910) and the floodplain forests of New York (Reschke 1990) and Pennsylvania (Smith 1991), in part, are included in this association.

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Anderson. R. R., D. M. McFaden, R. J. Kramer, J.C. Dee, and G. C. Jones. 1977. Rock Creek Park and Rock Creek and Potomac Parkway: vegetation community structure and automated classification of vegetation communities. Unpublished report. Department of Biology, The American University, Washington, D.C. National Park Service Contract number CX6000-3-1452.

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PLOTS

1, 6, 7, 12, 25, 26?, 54, 55, 59, 60, 65, 67, 72, 73

Pinus taeda - Quercus (alba, falcata, stellata) Forest [Provisional]

COMMON NAME	Loblolly pine - mixed oak forest
SYNONYM	
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	I. Forest
PHYSIOGNOMIC SUBCLASS	IC. Mixed evergreen deciduous forest
PHYSIOGNOMIC GROUP	IC2. Mixed broad-leaved evergreen cold-deciduous forest
FORMATION	IC2Na. Mixed needle-leaved evergreen cold-deciduous forest
ALLIANCE	*Pinus taeda - Quercus (alba, falcata, stellata)* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE
This alliance has been described from Texas, Louisiana, Arkansas, and north to Virginia, Maryland and Delaware. Further clasification is needed to define the associations within this alliance and their corresponding ranges.

ENVIRONMENTAL DESCRIPTION
Throughout the range, associations of this alliance occur on dry sand or sand loam, clay loam, or silty clay loams. Soils are often coarse textured, shallow and droughty. This vegetation occurs on mid to lower slopes on broad flats or in sheltered ravines. At Rock Creek Park the association occurs exclusively on areas mapped as Joppa soils (Smith 1976), which are well-drained to excessively drained gravelly sandy loams of the coastal plain.

USFWS WETLAND SYSTEM Terrestrial

MOST ABUNDANT SPECIES

Globally

Strata	Species
Canopy	diverse; no dominant species
Sub-canopy	
Shrub layer	
Herbaceous	

Rock Creek Park

Strata	Species
Canopy	diverse; no dominant species
Sub-canopy	
Shrub layer	
Herbaceous	(sparse or patchy)

DIAGNOSTIC SPECIES
Rangewide: *Pinus taeda, Quercus falcata, Q. alba, Q. stellata, Carya* spp. At Rock Creek Park: *Prunus serotina, Liquidambar styraciflua, Quercus stellata, Quercus falcata, Quercus phellos, Pinus taeda*

VEGETATION DESCRIPTION
This association has not been defined yet and is based on the alliance classification. Virginia pine (*Pinus virginiana*) and loblolly pine (*Pinus taeda*) are usually present, generally less abundant in more mature stands. Turkey oak (also known as southern red oak, *Quercus falcata*) is characteristic but other oaks are also present including white oak (*Q. alba*), post oak (*Q. stellata*), black oak (*Q. velutina*), scarlet oak (*Q. coccinea*), blackjack oak (*Q. marilandica*) and willow oak (*Q. phellos*). Other less prevalent associates include black gum (*Nyssa sylvatica*), hickory (*Carya glabra, Carya tomentosa*), pitch pine (*Pinus rigida*), sweet gum (*Liquidambar styraciflua*), redbud (*Cercis canadensis*) and flowering dogwood (*Cornus florida*). Ericaceous shrubs are common including blueberry (*Vaccinium* spp.), huckleberry (*Gaylussacia* spp.), azalea (*Rhododendron nudiflorum*) and mountain laurel (*Kalmia latifolia*). Typical herbs and vines are wintergreen (*Gaultheria procumbens*), partridgeberry (*Mitchella* repens), Virginia creeper (*Parthenocissus quinquefolia*) and greenbriar (*Smilax* spp.).

At Rock Creek Park this forest is distinguished by the relatively high diversity of tree species, including a number of species that are infrequent at other locations throughout the park. No single species is dominant in the canopy. This community is characterized by the presence of black cherry (*Prunus serotina*), sweet gum (*Liquidambar styraciflua)*, loblolly pine (*Pinus taeda*)*,* blackjack oak (*Q. marilandica*), chestnut oak (*Q. prinus*), post oak (*Q. stellata*) and turkey oak (*Q. falcata*). Willow oak (*Q. phellos*) is typical in the sub-canopy or shrub layer. Other oaks, hickory (*Carya tomentosa*), and tulip poplar (*Liriodendron tulipifera*) may be present. Beech (*Fagus grandifolia*) tends to be sparse or absent. Typical shrubs & vines include Pennsylvania blackberry (*Rubus pensilvanicus*), greenbrier (*Smilax glauca, S. rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), arrow-wood (*Viburnum dentatum*), poison ivy (*Toxicodendron radicans*) and grape (*Vitis* spp). The herb layer tends to be patchy. Seedlings of many of the canopy tree species are represented in the herb layer.

This association was identified at several points within the Fort Totten and Barnard Hill areas at the eastern extent of Rock Creek Park that falls within the Coastal Plain province. The association is closely aligned with the location of Joppa soils in the park. This vegetation type was not described from any other areas of the park and is probably limited to the coastal plain. Long (1911, New Jersey) noted that *Liquidambar styraciflua* and *Quercus*

phellos were species by which the coastal plain could be clearly delineated from the Piedmont in this vicinity.

Neither Jorling (1969) nor Anderson et al. (1977) describe this vegetation type within Rock Creek Park but the Fort Totten and Barnard Hill areas were not included in their studies. The pine forest described by Anderson et al. (1977) is not the same as this association. Shreve et al. (1910) did describe a similar forest type from Prince George County, Maryland which abuts Washington D.C. This was characterized by loblolly pine (*Pinus taeda*), Virginia pine (*Pinus virginiana*), white oak (*Quercus alba*), black oak (*Q. velutina),* spanish oak (or turkey oak, *Q. falcata*), and post oak (*Q. stellata*). Black jack oak (*Q. marilandica*) was noted as present but less abundant than other oaks, beech (*Fagus grandiflora*) was also present. Shreve et al. (1910) described the forest as in early development due to the presence of early successional species such as the pines, black cherry, and sassafras. These descriptions appear to be closely related to the forest type that currently occurs at sites within Fort Totten and Barnard Hill. Past disturbance regime of Rock Creek sites is further implied from a related forest association in New Jersey (Lord and Boerner 1981) where areas with more recent disturbance (e.g., forest margins and jeep trails) contained the greater frequency of *Prunus serotina* and *Sassafras albidum.*

Currently, the association level classification for this forest type at Rock Creek Park has not been determined. The Rock Creek type is related to and may be the same as the *Pinus taeda - Quercus falcata / Gaylussacia baccata* Forest Association (loblolly pine - turkey oak / black huckleberry forest) that has been described from the Coastal Plain of Chesapeake Bay within this Alliance. Additional information and classification is needed to more precisely assign the Rock Creek park type at the association level.

At Rock Creek Park this Loblolly pine - mixed oak forest (*Pinus taeda - Quercus (alba, falcata, stellata)* Forest [Provisional]) occurs in association with the *Quercus (prinus, velutina) / Gaylussacia baccata* Forest Association.

NOTEWORTHY SPECIES

CONSERVATION RANK G?

RANK JUSTIFICATION Further data are needed to define this association and its rank.

COMMENTS
This is included in the broadly-defined oak-pine forest (Braun 1950) that ranges from New Jersey to Mississippi. The southern coastal plain mixed oak forest subtype of the mesic coastal plain forest (Breden 1989, New Jersey) and the *Pinus taeda - Quercus phellos – Liquidambar* forest (Rawinski 1989, Delaware) are similar and possibly synonymous with this association. The pine-oak forest (Shreve et al. 1910) described from Maryland's western shore district is similar or synonymous with this association. The southern mixed hardwood forest of Ware (1970, Virginia) is also related to this association.

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PLOTS

41, 43, 44, 45, 46, 47

Pinus virginiana - Quercus (alba, stellata, falcata, velutina) Forest Association (CEGL006171)

COMMON NAME Virginia pine - oak forest

SYNONYM

TNC SYSTEM Terrestrial

PHYSIOGNOMIC CLASS I. Forest

PHYSIOGNOMIC SUBCLASS IC. Mixed evergreen deciduous forest

PHYSIOGNOMIC GROUP IC2. Mixed broad-leaved evergreen cold-deciduous forest

FORMATION IC2Na. Mixed needle-leaved evergreen cold-deciduous forest

ALLIANCE *Pinus virginiana - Quercus (alba, stellata, falcata, velutina*) Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE
This association occurs in Pennsylvania, Virginia, West Virginia, Tennessee, Georgia and Alabama, and probably Maryland.

ENVIRONMENTAL DESCRIPTION
This association occurs on middle to upper slope positions at elevations below 3,000 feet. At Rock Creek Park this vegetation type occurs on well-drained soils of hilltops.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

Strata	Species
Canopy	*Pinus virginiana and Quercus alba, stellata, falcata* and/or *Q. velutina*
Sub-canopy	*Quercus* spp
Shrubs	ericads (e.g., *Vaccinium pallidum, V. stramineum, Gaylussacia* spp., *Kalmia latifolia, Rhododendron* spp.)
Herbaceous	(sparse)

Rock Creek Park

Strata	Species
Canopy	*Pinus virginiana, Quercus prinus, Q. velutina, Liriodendron tulipifera*
Sub-canopy	*Quercus velutina, Q. rubra, Q. alba*
Shrubs	*Viburnum acerifolium* and ericaceous species
Herbaceous	(sparse)

DIAGNOSTIC SPECIES
Pinus virginiana, Liriodendron tulipifera

VEGETATION DESCRIPTION
This broadly-defined association is an early to mid-successional forest characterized by the presence of Virginia pine (*Pinus virginiana*) in the canopy. Younger stands have greater percent cover of pine, more mature stands contain less than 30% cover of pine. Oaks (*Quercus rubra, Q. velutina, Q. prinus*) are usually co-dominant with the pine, but tulip poplar (*Liriodendron tulipifera*) and beech (*Fagus grandifolia*) may be present as well. Over time these areas succeed to hardwood forests dominated by oak, beech and tulip poplar.

At Rock Creek Park, this association contains sparse to moderate cover of Virginia pine (*Pinus virginiana*). Historically, table mountain pine (*Pinus pungens*) was an infrequent component of this association but this species has since diminished or died out in the park. Associates include oaks (*Quercus rubra, Q. velutina, Q. prinus*), tulip poplar (*Liriodendron tulipifera*), and beech (*Fagus grandifolia*). Maple-leaved viburnum (*Viburnum acerifolium*) is typical in the shrub layer and herbs tend to be sparse. Species composition in the shrub and herb layers is consistent with the surrounding forest types of the *Fagus grandifolia – Quercus alba / Podophyllum peltatum* association and the *Quercus (prinus, velutina) / Gaylussacia baccata* association.

NOTEWORTHY SPECIES

CONSERVATION RANK G?

RANK JUSTIFICATION
This is a successional forest type.

COMMENTS
In 1977 (Anderson et al. 1977) this association was not uncommon at the park. Now, twenty years later, almost all of these areas have succeeded to hardwood forest. Only a few plots were assigned to this type. These contained a substantial component of pine and could not be clearly assigned to one of the existing hardwood forest types. Plots that contained a small percent of pine and a better developed hardwood canopy and sub-canopy were assigned to either the *Fagus grandifolia - Quercus alba / Podophyllum peltatum* association or the *Quercus (prinus, velutina) / Gaylussacia baccata* association.

REFERENCES

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PLOTS

81, 84, 85

Rubus allegheniensis / Ampelopsis brevipedunculata Shrubland

COMMON NAME Blackberry / Porcelain berry Shrubland

SYNONYM

TNC SYSTEM Terrestrial

PHYSIOGNOMIC CLASS IV. Shrubland

PHYSIOGNOMIC SUBCLASS IV.B. Deciduous Shrubland

PHYSIOGNOMIC GROUP IV.B.2. Cold-deciduous Shrubland

FORMATION IV.B.2.a. Temperate deciduous Shrubland

ALLIANCE Alliance undefined

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE
This community is is an early seral stage and has only been identified at Rock Creek National Park. Similar groupings of species are likely to occur in other parts of the eastern United States.

ENVIRONMENTAL DESCRIPTION
This shrubland alliance occurs in openings in the forest – either along ecotones between forest stands and open areas dominated by graminoids, or in small gaps within a forest matrix. These small patches of shrubland occur on many soil types, although the species present changes somewhat with soils. Fewer exotic plants are found on more acidic soils. However, the size of the opening and the length of time since the disturbance that created it are more important factors affecting species composition in these early successional associations.

USFWS WETLAND SYSTEM Not applicable.

MOST ABUNDANT SPECIES

Rock Creek Park

Strata	Species
Sub-canopy	(Sparse to absent)
Shrub layer	*Ampelopsis brevipedunculata, Rosa mulitflora, Rubus allegheniensis, Celastrus orbiculatus, Smilax* spp.*, Fagus grandifolia, Liriodendron tulipifera, Prunus serotina, Ulmus rubra,Lindera benzoin*
Herbaceous	(Sparse to Patchy)

DIAGNOSTIC SPECIES
Rubus allegheniensis, Smilax spp., exotics

VEGETATION DESCRIPTION
In Rock Creek Park, this is an early successional association that is dominated by exotic vegetation, especially porcelain berry (*Ampelopsis brevipedunculata*) and multiflora rose (*Rosa multiflora*) with other native and non-native vines – Asian bittersweet *(Celastrus orbiculatus*), English Ivy (*Hedera helix*), Japanese honeysuckle (*Lonicera japonica*), greenbriar (*Smilax* spp.), poison ivy (*Toxicodendron radicans*), and/or grape (*Vitis* spp.). Usually these vines will be growing over blackberry (*Rubus allegheniensis*), wineberry (*Rubus phoenicolasius*), spicebush (*Lindera benzoin*), and/or seedlings of tulip poplar (*Liriodendron tulipifera*), cherry (*Prunus* spp.), or slippery elm (*Ulmus rubra*). Two variants of this association were evident within Rock Creek Park. These relate to position within the forest: blackberry shrublands are along ecotones between forest stands and open areas like meadows or mowed lawns, while forest gaps are totally surrounded by forest.

BLACKBERRY SHRUB VARIANT:
This is a shrubland of edges. Typically blackberry (*Rubus allegheniensis*)and/or multiflora rose (*Rosa mulitflora*) are covered densely by porcelain berry (*Ampelopsis brevipedunculata*) mixed with other vines. Rarely native or non-native tree seedlings are struggling to survive under the heavy vine cover. Most often the tree species are early successional species – cherry (*Prunus* spp.), elm (*Ulmus rubra*), mulberry (*Morus* spp.), tree-of-heaven (*Ailanthus altissima*), princess tree (*Paulonia tomentosa*), or catalpa (*Catalpa bignoniodes*). Usually the vine cover is too dense to allow herbaceous growth, but occasionally composites (Asteraceae) manage to survive.

FOREST GAP VARIANT:
This variant is more variable than the blackberry shrubland, in that the relative age, size, soils, and aspect have a pronounced effect on the species present. Gaps that are younger or more mesic tend to be dominated by exotics, while older, drier openings have more tree seedlings and shrubs – especially beech (*Fagus grandifolia*), oak species (*Quercus* spp.), tulip (*Liriodendron tulipifera*), spicebush (*Linders benzoin*), or mountain laurel (*Kalmia latifolia*). Gaps that have mountain luarel almost never have exotics, probably due to the acid soils.

NOTEWORTHY SPECIES

CONSERVATION RANK GW

RANK JUSTIFICATION
This community is not of conservation interest at this time.

COMMENTS

PLOTS
58 (forest gap variant)

UNASSIGNED PLOTS

The following plots could not be assigned to natural community alliances or associations. They represent areas dominated by non-natural vegetation or non-native weedy species.

36
66
70
71
74
78
79
80
82